

## ABSTRACT

A magnetic sensor including a ferromagnetic tunnel junction, comprises a free layer 10 a magnetic direction of which freely rotates, and a barrier layer 11 formed on the free layer and reduces a thickness in a first region, the free layer in a region corresponding to the first region functioning as a sensor portion for sensing an external magnetic field. Such magnetic sensor can provide magnetic sensors, magnetic heads and magnetic encoders having high sensitivity. Furthermore, such magnetic sensor can provide magnetic heads which are adaptable to high recording density of magnetic storage mediums, and hard disk devices of large storage capacities using the magnetic heads.